AMENDMENTS TO THE CLAIMS

Claims 1-28 (Canceled)

29. (New) An optical disk apparatus comprising:

a light source which irradiates a laser beam onto a recording layer of an optical disk by way of a disk base member to form a focusing spot on the recording layer, the optical disk having the transparent planar disk base member, the recording layer formed on the disk base member, and a reflecting layer in a certain positional relation to the recording layer;

a photo detector which receives a reflected beam from the reflecting layer; and

a tilt detecting means which detects tilt of the optical disk by using an output from the photo detector.

30. (New) The optical disk apparatus according to claim 29, wherein the recording layer is formed closer to an incident surface of the optical disk where the laser beam is incident than the reflecting layer.

31. (New) The optical disk apparatus according to claim 29, further comprising an aberration canceling means which is formed on an optical path for guiding the reflected beam to the photo detector to cancel a defocus aberration and a spherical aberration of the reflected beam.

32. (New) The optical disk apparatus according to claim 31, wherein the aberration canceling means includes a wavefront controlling device which controls a wavefront of the reflected beam.

33. (New) The optical disk apparatus according to claim 31, wherein the aberration canceling means includes a condenser lens which focuses the reflected beam on the photo detector, and a lens moving means which moves the condenser lens.

34. (New) An optical disk comprising:

a transparent planar disk base member;

a recording layer which is formed on the disk base member; and

a reflecting layer which reflects an incident laser beam by way of the disk base member, wherein

the reflecting layer is formed at a position opposing the disk base member with respect to the recording layer, and

a gap between the recording layer and the reflecting layer is set larger than a wavelength of the laser beam.

35. (New) The optical disk according to claim 34, wherein the recording layer is made of a photoisomerizing material having a property that two-photon absorption occurs by irradiation of the laser beam.

36. (New) An optical disk apparatus comprising:

a light source which irradiates a laser beam onto a dispersing part of an optical disk by way of a disk base member to form a focusing spot on the dispersing part, the optical disk having the transparent planar disk base member, a recording layer formed on the disk base member, and the dispersing part which randomizes at least a part of a phase of the laser beam incident by way of the disk base member;

a photo detector which receives a dispersed beam dispersed on the dispersing part; and

a tilt detecting means which detects tilt of the optical disk by using an output from the photo detector.

37. (New) The optical disk apparatus according to claim 36, wherein

the light source includes a first light source unit which generates a first laser beam to form a first focusing spot on an information recording section on the recording layer by focusing the first laser beam onto the information recording section, and a second light source unit which generates a second laser beam having a wavelength different from a wavelength of the first laser beam to form a second focusing spot on the dispersing part by focusing the second laser beam onto the dispersing part,

the photo detector includes a first detecting unit which receives the first laser beam reflected from the first focusing spot, and a second detecting unit which receives the second laser beam reflected from the second focusing spot, and

the tilt detecting means detects the tilt of the optical disk by using an output from the second detecting unit,

the optical disk apparatus further comprising a recorded information detecting means which detects information recorded on the recording layer by using an output from the first detecting unit.

38. (New) An optical disk comprising:

a transparent planar disk base member;

a recording layer which is formed on the disk base member; and

a dispersing part which randomizes at least a part of a phase of a laser beam incident by way of the disk base member.

39. (New) The optical disk according to claim 38, wherein the dispersing part is formed on the recording layer.

40. (New) The optical disk according to claim 39, wherein the dispersing part includes a servo mark formed on the recording layer.

41. (New) The optical disk according to claim 38, wherein the dispersing part is formed on a layer different from the recording layer.

42. (New) The optical disk according to claim 38, wherein the dispersing part includes at least one of a recess and a protrusion formed on a surface thereof to diffusingly reflect the laser beam on the surface of the dispersing part.

43. (New) The optical disk according to claim 42, wherein the depth of the recess or the height of the protrusion is a half wavelength of the laser beam or more.

44. (New) An optical disk according to claim 38, wherein

the dispersing part is made of a medium having transmittance to the laser beam, and is formed by dispersing dispersants capable of reflecting the laser beam in the medium from a surface of the medium to a depth thereof corresponding to a half wavelength of the laser beam or more.

45. (New) The optical disk apparatus according to claim 44, wherein the dispersants are formed by modifying the medium by selectively giving an energy larger than an energy of the laser beam to the medium.

46. (New) The optical disk according to claim 44, wherein

the dispersants are formed by dispersing absorbents serving as nuclei of the dispersants into the medium, and by allowing the absorbents to selectively absorb an energy of the laser beam to grow the nuclei.

47. (New) The optical disk according to claim 38, wherein the dispersing part disperses a beam having a wavelength different from the wavelength of the laser beam.

48. (New) An optical disk apparatus comprising:

a light source which irradiates a laser beam onto a recording layer of an optical disk by way of a disk base member, the optical disk having the transparent planar disk base member, and the recording layer formed on the disk base member;

a photo detector which receives a reflected beam from the optical disk;

an incoming beam optical system which allows the laser beam irradiated from the light source to be incident onto the optical disk with a first numerical aperture;

an outgoing beam optical system which allows the reflected beam from the optical disk to be received on the photo detector with a second numerical aperture larger than the first numerical aperture to guide the reflected beam to the photo detector; and

a tilt detecting means which detects tilt of the optical disk by using an output from the photo detector.

49. (New) The optical disk apparatus according to claim 48, wherein the first numerical aperture is 0.2 or smaller, and the second numerical aperture is 0.6 or larger.

50. (New) The optical disk apparatus according to claim 48, wherein the optical disk includes a dispersing part which randomizes at least a part of a phase of the reflected beam.

51. (New) The optical disk apparatus according to claim 50, further comprising:

a mode switching means which switches over an operation mode of the optical disk apparatus in a time-sharing manner between a recording/reproducing mode of performing at least one of recording information on and reproducing information from an information recording section on the recording layer by focusing the laser beam irradiated from the light source onto the information recording section, and a tilt detecting mode of detecting the tilt of the optical disk by focusing the laser beam irradiated from the light source onto the dispersing part; and

a numerical aperture switching means which switches over the numerical aperture of the laser beam to be incident onto the optical disk between the first numerical aperture and the second numerical aperture, wherein

the numerical aperture switching means sets the numerical aperture of the laser beam to the first numerical aperture in response to setting of the operation mode of the apparatus to the tilt detection mode by the mode switching means, and sets the numerical aperture of the laser beam to the second numerical aperture in response to setting of the operation mode of the apparatus to the recording/reproducing mode by the mode switching means.

52. (New) The optical disk apparatus according to claim 48, wherein the outgoing beam optical system guides, to the photo detector, the reflected beam from the optical disk which lies in an outer annular zone of an outgoing optical path and which has a numerical aperture larger than the first numerical aperture and not larger than the second numerical aperture.

53. (New) An optical disk apparatus comprising:

a light source which irradiates a laser beam onto a recording layer of an optical disk by way of a disk base member to form a focusing spot on the recording layer, the optical disk having the transparent planar disk base member, and the recording layer formed on the disk base member;

a wavefront controlling device which controls a wavefront of the laser beam irradiated onto the recording layer;

a photo detector which receives a reflected beam from the recording layer,

the wavefront controlling device time-sharingly controlling the wavefront of the laser beam irradiated onto the recording layer in such a manner that a defocus aberration of a predetermined amount or a spherical aberration of a predetermined amount is included; and

a tilt detecting means which detects tilt of the optical disk by detecting a tilt aberration or a coma aberration included in the reflected beam by using an output from the photo detector.

54. (New) The optical disk apparatus according to claim 53, further comprising an aberration canceling means which is formed on an optical path for guiding the reflected beam reflected from the recording layer to the photo detector to cancel a defocus aberration and a spherical aberration of the reflected beam.

55. (New) An optical disk apparatus for performing at least one of recording information on a recording layer of an optical disk, and reproducing information from the recording layer, the apparatus comprising:

a light source which irradiates a laser beam onto the recording layer by way of a disk base member, the optical disk having the transparent planar disk base member, and the recording layer formed on the disk base member, the optical disk being so configured as to pass at least a part of the laser beam irradiated from the light source;

a photo detector which receives the laser beam that has passed through the optical disk; and

a tilt detecting means which detects tilt of the optical disk by using an output from the photo detector.

56. (New) An optical disk comprising:

a first transparent planar disk base member;

a second disk base member; and

a recording layer which is formed between the first disk base member and the second disk base member, the recording layer being so configured as to pass at least a part of a laser beam that has been irradiated through the first disk base member through the second disk base member.